

What is claimed is:

1.           A wireless sensor incorporated bearing assembly comprising:  
          a bearing including a stationary race member and a rotatable race member;  
          a wireless sensor unit; and  
          a sensor unit mounting device for removably mounting the sensor unit on the stationary race member of the bearing;  
          the sensor unit being of one-piece construction including a sensor section for detecting a target of detection, a signal transmitting circuit for transmitting by wireless a sensor signal outputted from the sensor section, and a transmitting antenna.
2.           The wireless sensor incorporated bearing assembly as claimed in Claim 1, wherein the sensor unit includes, as an electric power supply section for driving the sensor section and the signal transmitting circuit, an electric power receiving section for receiving an electric power by wireless.
3.           The wireless sensor incorporated bearing assembly as claimed in Claim 1, wherein the sensor unit includes as an electric power supply section for driving the sensor section and the signal transmitting circuit, a battery or an electric power generator.
4.           The wireless sensor incorporated bearing assembly as claimed in Claim 1, wherein the sensor section includes a revolution sensor, the revolution sensor including a pulsar ring for generating a cyclic magnetic change in a circumferential direction of the pulsar ring and a magnetic sensor fitted in face-to-face relation to the pulsar ring; and  
          wherein the sensor unit includes the magnetic sensor while the pulsar ring is fitted to the rotatable race member.
5.           The wireless sensor incorporated bearing assembly as claimed in Claim 1, wherein the sensor unit mounting device includes a fixing ring mounted on the stationary race member, a socket portion provided in the fixing ring for allowing the sensor unit to be removably inserted in a radial direction of the

bearing, and a retaining portion provided in the fixing ring or the socket portion for elastically retaining the sensor unit inserted into the socket portion.

6. The wireless sensor incorporated bearing assembly as claimed in Claim 1, wherein the bearing is a rolling bearing including a plurality of rows of rolling elements interposed between the stationary and rotatable race members.

7. The wireless sensor incorporated bearing assembly as claimed in Claim 6, wherein the rolling bearing is a wheel support bearing assembly used for rotatably supporting a vehicle wheel relative to a vehicle body structure, the wheel support bearing assembly comprising an outer member having a plurality of raceway surfaces and defining the stationary race member, an inner member having raceway surfaces confronting with the raceway surfaces in the outer member and defining the rotatable race member, and a plurality of rows of rolling elements interposed between the mutually confronting raceway surfaces in the outer and inner members.